Fw: EIC Yellow report: "Readout and DAQ" working group, request for input

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To: eic-rd-tracking-l@lists.bnl.gov <eic-rd-tracking-l@lists.bnl.gov>

Dear eRD6ers,
Here is below a request from the Electronic and DAQ WG on the anticipate FE electronics and DAQ need for each EIC sub detector.
We have to provide a feedback for them.
Let's add this topic to our discussion today
Best regards
Kondo

From: Andrea Celentano
Sent: Friday, February 28, 2020 6:03 AM
To: Gnanvo, Kondo (kg6cq); LCGreiner@lbl.gov; Annalisa.Mastroserio@ba.infn.it; hemmick@skipper.physics.sunysb.edu; Patrizia Rossi; Eugene Chudakov; Vladimir Berdnikov; ajentsch@bnl.gov; Michael Murray; Dave Gaskell; Alexander Kiselev; William Brooks; Yulia Furletova; Aschenauer Elke-Caroline
Cc: Silvia Dalla Torre; Kenneth N. Barish; Peter Jones; Markus Diefenthaler
Subject: EIC Yellow report: "Readout and DAQ" working group, request for input

Dear EIC Yellow Report workgroup conveners,
we contact you on behalf of the “Readout and DAQ” working group. Our group is aiming to identify possible solutions for the readout chain of the future EIC detector, from the front-end electronics to the data acquisition system, to the data-storage system, identifying possible technologies that are compliant with the requirements from the physics and from the detector itself. To this end, a critical input for us is the definition of the foreseen technologies for the different EIC sub-detectors.

In particular, we’d like to ask you if an early, preliminary estimate of the following key parameters is already available for the detectors that you are currently focusing on:

- The kind of detector, for instance gaseous detectors, solid ones (silicon or alike), scintillating ones (fibers, scintillator slabs,..), calorimeters (which kind ?), etc…
- If a front-end electronics is already included in the detector structure, or if a kind of front-end electronics is already considered to be associated with that detector
- The total number of channels foreseen for the detector
- The average rate per channel and the maximum rate per channel at the nominal EIC conditions
- The data that has to be acquired per each channel (hit time, hit amplitude, hit digitized waveform, …)
- The background level foreseen for that detector (physics background, low energy particle radiation, electronics noise,..)

We understand that, having the Yellow Report effort just started, it is not easy to provide precise numbers for this, however, even a first estimate would be of critical importance for us in order to start discussing possible front-end solutions, in the spirit of a coherent definition of the whole DAQ setup. We are also very interested to work together with the detector working groups on the definition of the front-end electronics to be associated with the detectors, as it is an important element for both the detector side and the readout one.

Thanks
Bests

Damien and Andrea